

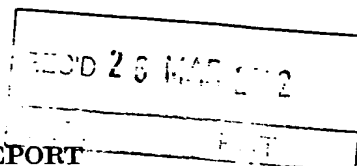
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



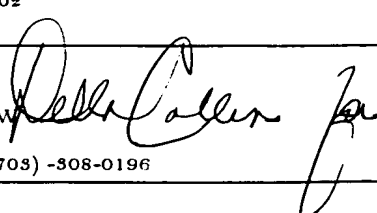
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Applicant's or agent's file reference PRINPOos.Wo	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/23652	International filing date (day/month/year) 28 AUGUST 2000	Priority date (day/month/year) 26 AUGUST 1999
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant THE TRUSTEES OF PRINCETON UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 21 MARCH 2001	Date of completion of this report 05 MARCH 2002
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer JEFFREY SIEW 
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I. Basis of the report**1. With regard to the elements of the international application: ***☒ the international application as originally filed☒ the description:pages 1-33 , as originally filedpages NONE , filed with the demandpages NONE , filed with the letter of _____☒ the claims:pages 34-43 , as originally filedpages NONE , as amended (together with any statement) under Article 19pages NONE , filed with the demandpages NONE , filed with the letter of _____☒ the drawings:pages 1-15 , as originally filedpages NONE , filed with the demandpages NONE , filed with the letter of _____☒ the sequence listing part of the description:pages NONE , as originally filedpages NONE , filed with the demandpages NONE , filed with the letter of _____**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.**4. ☒ The amendments have resulted in the cancellation of:**☒ the description, pages NONE☒ the claims, Nos. NONE☒ the drawings, sheets/fig NONE**5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).****

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/23652

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)	Claims	<u>(Please See supplemental sheet)</u>	YES
	Claims	<u>(Please See supplemental sheet)</u>	NO
Inventive Step (IS)	Claims	<u>(Please See supplemental sheet)</u>	YES
	Claims	<u>(Please See supplemental sheet)</u>	NO
Industrial Applicability (IA)	Claims	<u>(Please See supplemental sheet)</u>	YES
	Claims	<u>(Please See supplemental sheet)</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-10,17-19,24-27,34,35,37-42,48,50,52-58,66 & 67 novelty under PCT Article 33(2) as being anticipated by Kricka et al (US5,744,366 April 28, 1998).

Kricka et al teach a mesoscale device for measuring a sample with cells (see whole doc. esp. abstract). The device has a substrate and cover (see col. 6 line 47). They have electrodes inserted into each end of selection section to which electric field is applied and measure cell movement (see col. 15 line 20-27). The device may come with an incubator to control ambient conditions (see col. 17 line 119-25). The device has a delivery apparatus such as a syringe (see col. 6 line 49).

Claims 11-16,20-23,28-33,36,43-47,49,51,59-62,69 & 70 lack an inventive step under PCT Article 33(3) as being obvious over Kricka et al (US5,744,366 April 28, 1998) in view of Kell et al (US 4,810,650 March 7, 1989).

The teachings of Kricka et al are described previously.

Kricka et al do not teach frequency or capacitance.

Kell et al teach an apparatus for determining biomass by using applying alternating voltage between electrodes at specified frequencies and to provide a capacitance dependent signal (see whole doc. esp. abstract).

One of ordinary skill in the art would have been motivated to apply Kell et al's alternating current to Kricka et al's apparatus in order to further measure the biomass of samples.

Claims 63,64 & 68 lack an inventive step under PCT Article 33(3) as being obvious over Kricka et al (US5,744,366 April 28, 1998) in view of Asami et al (Biophysical Journal Vol. 76 June 1999).

The teachings and suggestions of Kricka et al are described previously.

Kricka et al do not teach analyzing cell cycle kinetics.

Asami et al teach real time monitoring of yeast cell (Continued on Supplemental Sheet.)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C12Q 1/68; G01N 33/53; C12M 1/00, 1/42; C07H 21/02, 21/00; B01L 3/00 and US Cl.: 435/6, 7.2, 283.1, 285.2; 536/23.1, 25.32, 422/99

V. 1. REASONED STATEMENTS:

The report as to Novelty was positive (YES) with respect to claims 11-16, 20-23, 28-33, 36, 43-47, 49, 51, 59-65, 68-70.

The report as to Novelty was negative (NO) with respect to claims 1-10, 17-19, 24-27, 34, 35, 37-42, 48, 50, 52-58, 66, 67.

The report as to Inventive Step was positive (YES) with respect to claims NONE.

The report as to Inventive Step was negative (NO) with respect to claims 1-70.

The report as to Industrial Applicability was positive (YES) with respect to claims 1-70.

The report as to Industrial Applicability was negative (NO) with respect to claims NONE.

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

division using an electromagnetic induction across metal electrodes (see whole doc. esp. abstract).

One of ordinary skill would have been motivated to apply Asami et al's method to modify Kricka et al's device in order to analyze cell division in rapid accurate measurements.

Claims 54-56, 60, 69 & 70 lack novelty under PCT Article 33(2) as being anticipated by British Tech. Group Ltd. (WO 94/02846 3 February 1994).

British Tech. Group Ltd. teach an apparatus and method determining a property of sample after electrical pulse is passed through it.

Claim 65 lacks an inventive step under PCT Article 33(3) as being obvious over Kricka et al in view of Stanley (US5,824,477 Oct. 20, 1998).

The teachings of Kricka et al are described previously.

Kricka et al do not teach passing individual labeled polynucleotides.

Stanley et al teach denaturing double stranded nucleic acid material across a voltage applied by an electrode and hybridizing labeled probe (see whole doc. esp. abstract).

One of ordinary skill in the art would have been motivated to apply Stanley et al's method of hybridizing to modify Kricka et al's device in order to provide denaturation and binding at ambient temperature.

----- NEW CITATIONS -----

NONE